

## PATENT SPECIFICATION

856,064

DRAWINGS ATTACHED.



Date of filing Complete Specification : March 2, 1959.

Application Date : March 24, 1958. No. 9300/58.

Complete Specification Published : Dec. 14, 1960.

Index at Acceptance :—Class 33, C11K.

International Classification :—E03F

## COMPLETE SPECIFICATION.

## Improvements in and relating to Liquid Sealing Traps.

We, MCALPINE & COMPANY, LIMITED, a British Company, and JAMES EDWARD MCALPINE, a British Subject, both of Kelvin Avenue, Hillington, Glasgow, S.W.2, Scotland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

10 This invention has reference to liquid sealing traps such as are or can be connected to the shank of a wash-hand basin, sink, bath or the like and to a waste pipe. A liquid sealing trap of this kind may be of

15 U formation, one leg thereof being connected to the shank of the basin, sink or the like and the other connected to the waste pipe. Alternatively, the trap may be in the form of a bottle-like container through which

20 extends a vertical inlet pipe, the container having an outlet for connection to a waste pipe.

In sealing traps as above set forth there is always a danger in suction being set up

25 in the waste pipe which results in a gurgling noise in the trap. Further the suction may be such that sufficient liquid is drawn from the trap to break the liquid seal.

The invention has for its primary object

30 to provide improvements in liquid sealing traps which will prevent gurgling in the trap.

A further object is to provide improvements whereby the liquid seal will not be

35 broken by suction in the waste pipe.

To this end, according to the present invention, a liquid sealing trap is provided with a non-return air valve which is normally closed but opens automatically by suction

40 in the trap, opening of the valve resulting in the prevention of gurgling in the trap. The opening of the valve admits air to the

trap to destroy the minus pressure therein and thereby preserve the liquid seal.

Two embodiments of the invention will now be described with reference to the accompanying drawings wherein:—

Figure 1 is an elevation of a liquid sealing trap of U formation in accordance with the invention;

Figure 2 is a section of the non-return valve incorporated in the sealing trap shown in Figure 1;

Figure 3 is a section of a liquid sealing trap of bottle-like formation; and

Figure 4 is a section of the non-return valve incorporated therein.

In the liquid sealing trap shown in Figure 1 a non-return air valve 10 is applied to a trap 11 of the type which is of U formation, one leg 12 of the trap, i.e. the inlet leg, having a coupling 13 by which it can be connected to the shank of a wash-hand basin, sink or the like, while the other leg thereof 14, i.e. the shorter leg, constitutes the outlet leg communicating with an outlet

65 pipe 15 for connection to a waste pipe. To said outlet is secured the non-return air valve 10. Said valve is conveniently in the form of a cylindrical casing 16 having at one side thereof a hollow stem or branch 17 connected to the upper end of the leg 14, the stem communicating with an interior of the cylinder. Within the cylinder is a bore 18 the upper end of which constitutes a

75 truncated conical valve seat 19 on which rests a non-return valve member 20 of like formation. The foot of this bore 18 is open to the atmosphere.

Should suction develop in the trap the minus pressure therein will be transmitted to the cylindrical casing 16 with the result that the valve member 20 is raised off its seat. In consequence air passes through the

2

856,064

bore 18, past the valve and through the cylindrical casing into the trap. The air drawn into the trap prevents gurgling therein. Further it results in the liquid seal remaining intact. Immediately the suction in the trap is destroyed the non-return valve member re-seats on the valve seat.

The bottle trap shown in Figure 3 consists of a cylindrical container 21 closed at its lower end and connected at its upper end to a cylindrical head 22 having a branch outlet 23 for connection to a waste pipe and an inlet pipe 24 extending downwardly through the head 22 and stopping short of the foot of the container 21. To the cylindrical head or outlet branch the non-return air valve is fitted. The valve is shown in Figure 4 and is substantially similar to that shown in Figure 2 but the branch or stem 17 extends laterally from the head 22.

Such traps may be formed of a suitable plastic such as that known by the Registered Trade Mark "Alkathene". The valve casing

may be of like material but the valve member and its seat are preferably of metal.

Such a trap and valve operate in exactly the same manner as the trap of U formation and valve described with reference to Figures 1 and 2.

#### WHAT WE CLAIM IS:—

1. A liquid sealing trap provided with a non-return air valve which is normally closed but opens automatically by suction in the trap, opening of the valve resulting in the prevention of gurgling in the trap.

2. A liquid sealing trap constructed substantially as herein described and illustrated in Figures 1 and 2 of the accompanying drawings.

3. A liquid sealing trap constructed substantially as herein described and illustrated in Figures 3 and 4 of the accompanying drawings.

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#### PROVISIONAL SPECIFICATION.

#### Improvements in and relating to Liquid Sealing Traps.

We, MCALPINE & COMPANY, LIMITED, a British Company, and JAMES EDWARD MCALPINE, a British Subject, both of Kelvin Avenue, Hillington, Glasgow, S.W.2, Scotland, do hereby declare this invention to be described in the following statement:—

This invention has reference to liquid sealing traps such as can be connected to the shank of a wash-hand basin, sink, bath or the like and also connected or adapted for connection to a waste water pipe. A liquid sealing trap of this kind may be of U formation, one leg thereof being connected to the shank of the basin, sink or the like and the other connected to waste water pipe. Alternatively the trap may be in the form of a bottle-like container through which extends a vertical inlet pipe, the container having an outlet for connection to a waste pipe.

In sealing traps as above set forth there is always a danger in suction being set up in the waste pipe which results in a gurgling noise in the trap. Further the suction may be such that sufficient liquid is drawn from the trap to break the liquid seal.

The invention has for its primary object to provide improvements in liquid sealing traps which will prevent gurgling in the trap.

A further object is to provide improvements whereby the liquid seal will not be broken by suction in the waste pipe.

To this end, according to the present invention, a liquid sealing trap is provided with a non-return air valve which is normally closed but opens automatically by suc-

tion in the trap, opening of the valve resulting in the prevention of gurgling in the trap. The opening of the valve results in air being admitted to the trap to destroy the minus pressure therein and thereby preserve the liquid seal.

According to one embodiment of the invention a non-return air valve is applied to a trap of the type which is of U formation, one leg of the trap, i.e. the inlet leg, having a coupling by which it can be connected to the shank of a wash-hand basin, sink or the like while the other leg thereof, i.e. the shorter leg, constitutes the outlet leg communicating with the base of a cylindrical chamber, the upper end of said chamber, which end is flat, having an outlet pipe for connection to a waste pipe. To said outlet is secured the non-return air valve. Said valve is conveniently in the form of a cylindrical casing having secured to one side thereof a hollow stem for connection to the outlet pipe, the stem communicating with the interior of the cylinder. Within the cylinder is a small cylinder the upper end of which constitutes a valve seat on which rests a non-return valve. The foot of this smaller cylinder is open to the atmosphere.

Should suction develop in the trap the minus pressure therein will be transmitted to the cylindrical casing with the result that the valve is raised off its seat. In consequence air passes through the smaller cylinder, past the valve and through the cylindrical casing into the trap. The air drawn into the trap prevents gurgling there-

856,064

3

in. Further it results in the liquid seal remaining intact. Immediately the suction in the waste pipe is destroyed the non-return valve re-seats on the valve seat.

5 The invention may likewise be applied to bottle traps which consists in a cylindrical container closed at its lower end and connected at its upper end to a cylindrical head having a branch outlet for connection to  
10 a waste pipe and an inlet pipe extending downwardly through the head and stopping short of the foot of the container. To the

cylindrical head or outlet branch the non-return air valve is fitted.

Such traps may be formed of a suitable plastic such as that known by the Registered Trade Mark "Alkathene". The valve may be of like material but the valve member and its seat are preferably of metal.

Such trap and valve operate in exactly the same manner as the trap of U formation and valve above described.

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Abingdon : Printed for Her Majesty's Stationery Office, by Burgess & Son (Abingdon), Ltd.—1960.  
Published at The Patent Office, 25, Southampton Buildings, London, W.C.2,  
from which copies may be obtained.

856064 COMPLETE SPECIFICATION  
1 SHEET  
This drawing is a reproduction of  
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